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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/746,113	12/21/2000	Hui Wang	3375	2203

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EXAMINER

CALAMITA, HEATHER

ART UNIT PAPER NUMBER

1637

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/746,113	WANG ET AL.	
	Examiner	Art Unit	
	Heather G. Calamita, Ph.D.	1637	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 September 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 and 24-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 and 24-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

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## DETAILED ACTION

### *Status of Application, Amendments, and/or Claims*

1. Claims 1-20 and 24-31 are currently pending and under examination. All arguments have been fully considered and thoroughly reviewed, but are deemed not persuasive for the reasons that follow.

This action is made NON-FINAL. Any objections and rejections not reiterated below are hereby withdrawn.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5, 11-15, 18-20, 24 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Weidenhammer et al (US6,379,897 April 30, 2002).

Weidenhammer et al. teach (claim 1) a method for detecting different mRNAs in a sample comprising (see col. 14 line 16-46 & col. 1 lines 45-55):

hybridizing the sample with a microarray substrate, wherein the substrate has a plurality of different immobilized probes and wherein the probes are suitable for multiple bases primer extension reactions (see col. 14 line 16-46 & col. 1 lines 45-55);

synthesizing primer extension products with a nucleic acid polymerase, appropriate reagents and conditions, from the primers and using the mRNAs as templates wherein the primer extension products comprise 5' regions of the mRNAs (see col. 14 line 16-46 & col. 1 lines 45-55); and

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detecting the primer extension products to determine the level of said different mRNAs wherein target regions of the probes are distributed along the mRNAs (see col. 2 lines 42-50). For example IL-6 in col. 25 where there is a 500 bp fragment a 250 bp fragment and a 100 bp fragment. They detect fragments of transcripts (see col. 22 line 23-25).

With regard to claims 2 and 3, Weidenhammer et al. teach the nucleic acid polymerase is a thermostable reverse transcriptase (see col. 14 line 16-46 & col. 1 lines 45-55).

With regard to claim 4, Weidenhammer et al. teach oligonucleotide probes (see col. 12 lines 27-34).

With regard to claim 5, Weidenhammer et al. teach oligonucleotide probes immobilized on the substrate in a 5'-3' direction (see col. 12 lines 27-34).

With regard to claims 11-15, Weidenhammer et al. teach 100 probes (see col. 9 line 14).

With regard to claims 18-20, Weidenhammer et al. teach the extension products are detected with a label incorporated during synthesizing (see col. 14 lines 30-33).

With regard to claims 24 and 25, Weidenhammer et al. teach labeled dNTPs (see col 14 line 34-40).

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

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Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 6-10, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weidenhammer et al (US6,379,897 April 30, 2002) in view of Heller et al (US5,605,662 Feb 25, 1992).

The teachings of Weidenhammer et al are described previously.

Weidehammer do no explicitly teach synthesis of probes.

With regard to claim 6, Heller et al. teach probe (via combinatorial synthesis) synthesis (see col. 21 lines 1-43). With regard to claims 7-10 Heller et al. teach detection of multiple RNAs, DNA is exemplified, however RNA is disclosed in col. 17 line 15 (see col. 18 lines 39-40). With regard to claims 16 and 17, Heller et al teach 10,000 probes per cm<sup>2</sup> (see col. 18 lines 39-40).

It would have been prima facie obvious to utilize the method of sequencing as taught by Heller et al. with the array and method of detecting RNA as taught by Weidehammer et al. since Heller et al. (USPN 5,605,662, 02/25/1992) note "that combinatorial synthesis allows very large numbers of sequences to be synthesize on device (see col. 20 line 60-62)." An ordinary practitioner would have been motivated to use the method of sequencing as taught by Heller et al. with the array and method of detecting RNA as taught by Weidehammer et al. in order to produce a large number of probes within the microlocations of the microarray. Moreover, it would have been prima facie to increase the number of probes within the microlocation to detect a greater number of different RNA targets.

4. Claims 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weidenhammer et al (US6,379,897 April 30, 2002) in view of Heller et al (US5,605,662 Feb 25, 1992) in further view of Chee et al (US5,837,832 Nov. 17, 1998)

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The teachings and suggestions of Weidenhammer et al and Heller et al are described previously.

Weidenhammer et al do not teach tiling.

Chee et al teach tiling (see whole document).

One of ordinary skill in the art would have been motivated to apply Chee's tiling technique to the combined invention of Weidenhammer and Heller et al in order to examine regions of genes. It would have been prima facie obvious to apply Chee's tiling to Weidenhammer's probes in order to detect sequence variation in exon boundaries.

5. Claims 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weidenhammer et al (US6,379,897 April 30, 2002) in view of Combimatrix.

The teachings of Weidenhammer et al. are described previously.

Weidenhammer et al. do not teach (claims 30-31) fragmenting RNA

Combimatrix teach fragmenting RNA (see p. 4).

It would have been prima facie obvious to utilize the array and method of detecting RNA as taught by Weidenhammer et al. with fragmented RNA as taught by Combimatrix (2001) since Combimatrix (2001) state, "RNA targets should be fragmented to maximize binding specificity and detection sensitivity (see p. 4)." An ordinary practitioner would have been motivated to use the array and method of detecting RNA as taught by Weidenhammer et al. with fragmented RNA as taught by Combimatrix (2001) in order to maximize the binding specificity of the RNA to the array while also increasing detection sensitivity.

#### *Response to Arguments*

6. Applicant's arguments with respect to claim 1-20 and 24-31 have been considered but are moot in view of the new ground(s) of rejection.

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*Summary*

7. No claims allowed.

*Correspondence*

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Heather G. Calamita whose telephone number is 571.272.2876 and whose e-mail address is [heather.calamita@uspto.gov](mailto:heather.calamita@uspto.gov). However, the office cannot guarantee security through the e-mail system nor should official papers be transmitted through this route. The examiner can normally be reached on Monday through Thursday, 7:00 AM to 5:30 PM.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Gary Benzion can be reached at 571.272.0782.

Papers related to this application may be faxed to Group 1637 via the PTO Fax Center using the fax number 571.273.8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to 571.272.0547.

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hgc

  
JEFFREY FREDMAN  
PRIMARY EXAMINER

10/22/05